REMARKS

This is in response to the non-final Official Action currently outstanding with respect to the above-identified application.

Claims 1-22 were present in this application as of the time of the issuance of the currently outstanding Official Action. Claims 1-21 currently stand rejected by the Examiner. Claim 22 stands allowed (but has been amended above to delete an extraneous ")" appearing therein. By the foregoing Amendment Claim 1 has been amended so as to incorporate the limitations of Claim 3, to delete the previous reference to "high" thermal conductivity, and to specify that the sealing body has thermal conductivity. Claim 3 is canceled, without prejudiice. Otherwise, no Claims are amended, canceled, added or withdrawn. Accordingly, upon the entry of the foregoing Amendment, Claims 1-2 and 4 -22 as hereinabove amended will constitute the claims under active prosecution in this application.

The claims of this application are reproduced above including appropriate status identifiers and showing the Amendments sought as required by the Rules.

More specifically, it is noted that in the currently outstanding Official Action, the Examiner has:

1. Not re-acknowledged Applicants' claim for foreign priority under 35 USC §119(a)-(d), and reconfirm that the required certified copies of the priority document have been received by the United States Patent and Trademark Office - -**Applicants' claim for foreign priority and the receipt of the required copies of the priority documents by the United States Patent and Trademark Office were confirmed in the Official Action of 28 December 2007**;

2. Not reconfirmed that the drawings filed on 28 April 2006 have been accepted – **The acceptance of the drawings as filed on 28 April 2006 appears in the Official Action dated 28 December 2007**;

3. Objected to Claim 1 because "the axial path" lacks proper antecedent basis – **This objection appears in the Official Action of 28 December 2007 and the defect has been previously corrected by changing the word "axial" to -- optical – in Claim 1,**

4. Rejected Claims 1-21 under 35 USC §103(a) as being unpatentable over Minamio et al., (U.S. Patent 6,864,117) in view of Fukasawa et al. (U.S. Patent No. 6,396,082);

5. Indicated that Claim 22 is allowed.

6. Provided Applicants with her response to Applicants' previous argument.

Further comment in these Remarks regarding items 1-3 and 5-6 above is not considered to be necessary in these Remarks.

Applicants appreciate the Examiner's thorough examination of the subject application and respectfully request entry of the foregoing Amendment and reconsideration of the subject application based on the foregoing amendments and the following remarks.

In the above regard, Applicants respectfully note that the Claims of this application now have been amended such that (i) the previous reference to "high" thermal conductivity has been deleted, (ii) the sealing body of Claim 1 has been characterized specifically as having thermal conductivity, and (iii) the limiations of Claim 3 have been incorporated into Claim 1 (Claim 3 being canceled, without prejudice).

Furthermore, with regard to the substance of the Examiner's currently outstanding rejections, Applicants note that at line 4 of page 3 of the currently outstanding Official Action the Examiner apparently has equated the sealing body 29 of the present invention with the sealing resin 6 of the Minamio reference. Applicants respectfully submit, however, that the Examiner's position in this regard cannot be supported on the present record.

The Minamio reference describes that: "The periphery of the imaging element 4 is filled with a sealing resin 6 so as to hermetically seal a gap between the end portion of the imaging element 4 and the base 31." (see Minamio at Column 1, lines 33-37) As reference to Figure 1 of the present application in comparison to the Minamio reference readily shows, however, the sealing resin 6 of the Minamio reference is distinctly and completely constitutionally different in structure from " a sealing body that is formed in a region excluding the optical path, and seals the optical element mounted on the mounting body" as in the present invention.

Still further, from the point of view of thermal conductivity, according to the constitution of the Minamio reference, it is readily apparent that heat from the imaging element 4 escapes only to the base 31 via a protrusion electrode 7. In the present invention, on the other hand, it is clear that "by setting large the heat transmission rate of the sealing body 29, the heat dissipation characteristics of the to-be-mounted bodies 22, 32, 33a and 33b can be increased" such that the sealing body 29 can function as a heat sink (see present specification, Page 29, lines 12-15) Consequently, heat from the optical element 22 can escape not only to the mounting body 34, but also to the sealing body 29 whereby the overall thermal conductivity achievable with the present invention is unequivocally superior to that of the Minamio reference (even though Applicants' previous utilization of the term "high thermal conductivity" has been read by the Examiner more broadly than the context of Applicants' previous argument suggested was contemplated by the use of that terminology in the next previous Amendment). Hence, Applicants respectfully submit that their previous arguments with respect to "high theremal conductivity" at the very least support Applicants' present position that the overall heat conductivity of the present invention is superior to that of the Minamio reference. Those arguments are quoted below for the convenience of the Examiner.

> "More specifically, support for the amendments proposed above is found in the present specification as follows:

The optical element 22 blocks one end portion 48 of the light transmitting section 38 in its axis direction, and is attached to a surface portion 39 of the optical element mounting section 34 on the side in one thickness direction A1. Herein, the one end portion 48 of the light transmitting section 38 in the axis direction serves as a side end portion of the light transmitting section 38 on the side in one thickness direction A1.
The optical element 22 is provided with an optical surface 41. When the optical element 22 is a light-emitting element, e.g., LED, the optical surface 41 serves as a light-emitting surface. When the optical element 22 is a light-receiving element, e.g., PD, the optical surface 41 serves as a light-receiving surface. The optical surface 41 is directed to the light transmitting section 38 from the side in one thickness direction A1, and is disposed on the extension line of the optical path 80. As such, the optical element 22 is so disposed that the optical surface 41 faces the optical element mounting section 34 of the lead frame 30. Such placement of the optical element 22 and the lead frame 30 is sometimes referred to as face-down placement. (Page 27, line 7 to Page 28, line 4 and Fig. 1).

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This enables to easily transfer the heat generated on the optical surface 41 to the optical element mounting section 34, and the heat dissipation characteristics of the optical element 22 can be made better. As a result, the operating temperature of the optical element 22 can be reduced so that the optical element 22 can be stably operated even under the high temperature environment. Moreover, the stress to be produced in the optical element 22 can be reduced while suppressing the heat expansion of the optical element 22 so that the optical element 22 can be protected from any possible damage.
When an LED is used for the optical element 22, the optical surface 41 serving as an active surface layer of the LED produces heat. The optical element 22 is thus large in heat resistance. Therefore, with the conventional face-up placement, i.e., with the placement in which the surface opposite the optical surface 41 is attached to the lead frame 30, the heat transmission rate is low from the optical surface 41 to the optical element mounting section 34, and the heat dissipation characteristics are thus poor.
On the other hand, in the invention, with the face-down placement in which the optical element 22 is attached to the lead frame 30, the heat is transferred from the optical surface 42 directly to the lead frame 30 without going through the optical element 22. With such a configuration, the heat dissipation characteristics of the optical element 22 can be made better. Especially when the optical element 22 is made of gallium arsenide (GaAs), the heat resistance is high so that the heat dissipation characteristics of the optical element can be improved to a further degree.

> With the face-down placement, a surface portion 46 of the optical element 22 is in contact with the lead frame 30 on a side in the other thickness direction A2. This thus eliminates the need to use the sealing body 29 for sealing the neighboring portion of the optical surface 41. With such a configuration, even if the optical element 22 is small in size, there is no more need to dispose the sealing body 29 in the neighboring portion of the optical surface 41 so that the sealing structure 20 can be manufactured with ease.
> When the optical element 22 and the optical element mounting section 34 are electrically connected to each other, for attachment of the optical element 22 and the optical element mounting section 34, it is preferable to use an adhesive material with electrical conductivity for attachment of the optical element 22 to the optical element mounting section 34. This achieves to attach the optical element 22 to the optical element mounting section 34 in one operation while establishing an electrical connection therebetween.
> What is more, among any highly-conductive adhesives, using a material of a high thermal conductivity or a thin film material will lead to sufficient heat contact. It is more preferable if the adhesive can absorb any difference between the linear expansion coefficient of the lead frame 30 and that of the optical element For example, such an adhesive material can be implemented by silver paste or solder paste. Alternatively, eutectic gold bonding will do for attachment of the optical element 22to the optical element mounting section 34.
> (Page 35, line 2 to Page 37, line 13).
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> Accordingly, Applicants respectfully submit that it is self-evident that, because the mounting body is made of metal or Si with high thermal conductivity, rather than being made of resin with low thermal conductivity, the heat dissipation characteristics can be made better."

In addition, as described in the present specification at page 28, line 20, to page 29, line 12, the present invention by virtue of the foregoing amendment now contemplates for all of its embodiments a combination of elements having capabilities not envisioned by Minamio either alone, or in combination with the Fukasawa reference. Specifically, the above-mentioned passage of the present specification that conclusively establishes the foregoing distnction reads as follows:

> By making the linear expansion coefficient of the sealing body 29 closer in value to the linear expansion coefficients of the to-be-mounted bodies, i.e., the optical element 22, the wires 33a and 33b, and the driver circuit 32, the to-be-mounted bodies 22, 32, 33a and 33b can be increased in shock resistance. Note here that when the to-be-mounted bodies 22, 32, 33a and 33b each have a different linear expansion coefficient, the expansion coefficient of the sealing body 29 is optimally set so as to minimize any possible damage to the to-be-mounted bodies 22, 32, 33a and 33b.
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> For example, the linear expansion coefficient of the sealing body 29 is set to be almost the same as the linear expansion coefficient of the wires 33a and 33b or the optical element 22. The expression of almost the same includes the case where the values are exactly the same. This enables to reduce any possible damage of the to-be-mounted bodies 22, 32, 33a and 33b. Moreover, by setting large theheat transmission rate of the sealing body 29, the heat dissipation characteristics of the to-be-mounted bodies 22, 32, 33a and 33b can be increased.

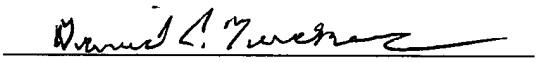
Hence, Applicants respectfully submit that neither the Minamio nor the Fukasawa reference whether taken alone or in combination with one another teach, disclose or suggest ***all*** of the features of the present invention now specifically set forth in Claim 1 (and by inference, the claims dependent therefrom). Consequently, Applicants respectfully submit that the Minamio and Fukasawa references whether taken alone or in combination with one another are insufficient to teach, disclose or suggest to one of ordinary skill in the art the improvements in the heat dissipation characteristics achieved by the present invention.

Accordingly, Applicants respectfully submit that the present invention should be recognized to have novelty and to be nonobvious over the references currently at issue. Entry of the foregoing Amendment, reconsideration and allowance of this application as hereinabove amended, therefore, are respectfully requested in response to this communication.

Applicants believe that additional fees are not required in connection with the consideration of this response to the currently outstanding Official Action. However, if for any reason a fee is required, a fee paid is inadequate or credit is owed for any excess fee paid, you are hereby authorized and requested to charge and/or credit Deposit Account No. **04-1105**, as necessary, for the correct payment of all fees which may be due in connection with the filing and consideration of this communication.

Respectfully submitted,

Date: September 12, 2008



SIGNATURE OF PRACTITIONER

Reg. No. 27,840

David A. Tucker
(type or print name of practitioner)
Attorney for Applicant

Tel. No. (617) 517-5508

Edwards Angell Palmer & Dodge LLP
P. O. Box 55874
P.O. Address

Customer No. 21874

Boston, MA 02205